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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/328,931	06/09/1999	DAVID CURT MORRIS	TES-7356-003	7477

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EXAMINER	
VERDIER, CHRISTOPHER M	
ART UNIT	PAPER NUMBER
3745	

DATE MAILED: 04/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/328,931	MORRIS, DAVID CURT	
	Examiner	Art Unit	
	Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *6-9-99* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Applicant's amendment dated March 3, 2005 has been carefully considered but is non-persuasive. Claims 1-4 are pending. Applicant has argued, in response to the new grounds of rejection of December 30, 2004 made by the Board of Patent Appeals and Interferences, that amended claim 1 is clear because the term "lifting body" is clearly defined in the relevant literature as a body that generates lift when passed through the air, and that this type of definition based on functional properties is permitted in patent claims. Applicant has further argued that any set of blades, when rapidly rotated and passed translationally and horizontally through the air that does not generate lift, falls outside the scope of claim 1. Applicant has further argued that there are clear tests which can determine if a particular set of blades could be used to implement the method of claim 1, such as if a solid disk having the shape swept out would generate lift by being translated horizontally through the air, and that if it does not, then a set of blades sweeping out the shape would not fall within the scope of claim 1. Applicant has further argued that lift is generated by the virtual disk being translated horizontally through the air, and that the dictionary definition of virtual is "being such practically or in effect, though not in actual fact." Applicant has further argued that it is not as if applicant is stating that an imaginary disk can pass through real air and generate real lift, but that the virtual disk is physical and real and over time is a disk that is defined by the periodic presence of a blade at each spot in its extent, and that experimentation has shown that it does not generate lift.

These arguments are not persuasive, because as set forth by the Board of Patent Appeals and Interferences in the new grounds of rejection of December 30, 2004, it is ambiguous as to the configuration of the set of rotatable blades that is covered by the claimed subject matter in

that it is not clear whether any set of rotatable blades that has a degree of camber (downward turn) over any extent thereof would effect a virtual disk shape having the properties of a lifting body, as now claimed. Applicant indicates that the present invention in Figure 1b is in a flat configuration similar to the shape of standard helicopter blades (shown in the figure with slightly downwardly cambered ends). It is unclear if the downwardly cambered ends in Figure 1b are the shape of the ends of the referenced standard (prior art) helicopter blades. In figure 13a, the blades turn down "slightly" near distal ends 116. It has not been clarified that rotatable blades that have any degree of camber (downward turn) over any extent thereof would effect a virtual disk shape having the properties of a lifting body as is now claimed. In other words, the language, when read in light of the underlying disclosure, leaves it uncertain as to what configuration for the set of rotatable blades would, in fact, be capable of sweeping out a virtual disk shape having properties of a lifting body to generate lift. It is uncertain as to the scope of virtual disk shapes (swept out by a set of rotatable blades) having the properties of a lifting body now claimed. The specification offers symmetrical and asymmetrical blade variations, which are disclosed as functioning to sweep out a (virtual) lifting body. For example, Figures 2 and 2a depict a blade symmetrically deformed downwardly at distal ends that is indicated to sweep out a shape similar to that of an inverted flying disk, with the similar aerodynamic property of providing lift. Figure 13a reveals symmetrical rigid blades that turn down slightly near distal end 116 and are disclosed as creating a lifting body that is "somewhat 'frisbee' shaped" when spun rapidly. In Figure 13c, the symmetrical rigid blades (not distal ends) are disclosed as having a rigid downward camber. On the other hand, applicant indicates that an asymmetrical blade, such as in Figure 3b imparts an asymmetrical camber to the shape of a lifting body. The specification

as a whole, however, does not provide an adequate basis for understanding the scope of the claimed disk shapes having the properties of a lifting body, as indicated above. Finally, being virtual, it is not clear that the virtual disk shape can be pushed through real air to thereby generate real lift, this recitation being akin to the disclosure that the virtual disk "cuts rapidly" through real, not virtual air (applicant's specification, page 2).

Declarations Under CFR 1.132

The Declarations under 37 CFR 1.132 filed October 10, 2001 are insufficient to overcome the rejection of claims 1 and 4 under 35 U.S.C. 102(b) as being anticipated by Wallace; the rejection of claims 1-4 under 35 U.S.C. 102(b) as being anticipated by Wilford; the rejection of claim 1 under 35 U.S.C. 102(b) as being anticipated by Hartt; the rejection of claims 1-3 under 35 U.S.C. 102(b) as being anticipated by Bennie; the rejection of claim under 35 U.S.C. 102(b) as being anticipated by Black; and the rejection of claims 1 and 4 as being anticipated by Kunz; as set forth in the last Office action because:

the declarations refer only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

The declarations do not provide any commentary upon or analysis of the references to Wallace, Wilford, Hartt, Bennie, Black, or Kunz which were relied in the previous Office action to reject various ones of claims 1-4. Applicant has argued throughout the prosecution history of

the instant application that the main issue concerning the above applied references is that they do not disclose a set of blades that sweep out the shape of a disk having the properties of a lifting body when they are rotated rapidly so that as the virtual disk is pushed translationally through the air it generates lift. As has been the examiner's position throughout the prosecution history, the above references all inherently disclose such features. The arguments advanced by the examiner to this effect are repeated later below. Careful review of the declarations by both Richard Miller and Dr. Daniel Schrage indicate that the declarations do not address the above main issue. The declarations merely describe features of the instant application that are disclosed in the specification of the instant application. Both of the declarations appear to support the examiner's position that the helicopters of the aforementioned references generate lift during forward flight; the declaration of Richard Miller (lines 13-14) states that "The standard helicopter works in such a manner that each rotating blade is at an angle of attack relative to the disc swept out by its blades and provides lift"; the declaration of Dr. Daniel Schrage (lines 14-16) states that "The standard helicopter works in such a manner that each rotating blade cuts through the air with a sufficient angle of attack as to provide lift." It is noted that the declaration of Richard Miller does not set forth his credentials.

The examiner has included excerpts from three separate texts discussing lift generated by airfoils in varying degrees, to support his position. The texts are "Physics, Parts I and II", pages 392-393; "Fluid Mechanics", pages 244-246; and "Fundamentals of Flight", pages 116-130. All of these texts discuss the theory of lift on airfoils.

In view of the foregoing, when all of the evidence is considered, the totality of the rebuttal evidence of nonobviousness fails to outweigh the evidence of obviousness.

Arguments Advanced by the Examiner in Previous Office Actions

Applicant has previously argued throughout the prosecution that the claims are patentable because a problem is encountered when rapid forward flight in helicopters is attempted and that the translational movement of the blades through the air interferes with the effect of the rotational movement of the blades, and that during the blades rearward sweep, they do not cut through the air, but rather travel at the same speed as the air passing by or have air pass over them in the same direction as the blade is moving. This argument is not persuasive because, contrary to Applicant's argument, the blades cut through the air during the blades rearward sweep because they are rotating, and hence cut through the air during both the blades forward sweep and the blade rearward sweep. With regard to Applicant's argument that a problem is encountered when rapid forward flight in helicopters is attempted and that the translational movement of the blades through the air interferes with the effect of the rotational movement of the blades, it appears that this problem would also affect Applicant's helicopter blades, because they are rotating in the same environment. Therefore, it is not seen how Applicant's blades would not be subject to this problem.

On page 2, lines 24-50 and page 3, lines 1-20, Applicant has provided two figures and has argued that the claims are patentable because in the present invention it is the shape swept out by the blades that has the properties of a lifting body, rather than the cross-section of the

individual blade, as in the case of a standard helicopter. This argument is not persuasive. As explained during the interview of February 9, 2001, which is of record, and further reiterated below, the generation of lift in an airfoil is a result of the pressure differential between the upper and lower surfaces of the airfoil. Differences in curvature between the upper and lower surfaces cause such a pressure differential, which normally results in an upwardly directed force. The shape swept out by the blades during rotation clearly has the properties of a lifting body, for the reasons set forth above, and further because if the shape did not have the properties of a lifting body, as Applicant has argued, there would be no lift during blade rotation and forward flight, hence all helicopters using airfoil-shaped blades would drop out of the air because there would be no lift capable of sustaining the helicopter in air. Applicant's figure on page 2 shows a cambered airfoil, and all of the airfoils of Wallace, Wilford, Hartt, Bennie, Black, and Kunz have at least some degree of camber. Because the airfoils are cambered, they will function according to the exact same principle of operation as Applicant's airfoil.

On page 3, lines 45-52 and page 4, lines 1-3, Applicant has argued that the PTO has not shown how any reference inherently shows a set of blades sweeping out the shape of a lifting body, and that the PTO should refer to and discuss the surface of revolution of the blade assembly, which the PTO has not done. The examiner respectfully strongly disagrees. The previous Office action clearly set forth all of the elements of the references which read on the claimed elements. In the event that Applicant did not understand the theory of inherency, the applied references all disclose rotatable blades 18 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is

pushed translationally through the air, it generates lift. As mentioned above, because the airfoils are cambered, they will function according to the exact same principle of operation as Applicant's airfoil, thus generating lift. Note that anticipation by a prior art reference does not require either the inventive concept of the claimed subject matter or the recognition of inherent properties that may be possessed by the prior art reference. See, Verdegaal Bros. Inc. v. Union Oil Co., 814 F.2d 628, 633, 2 USPQ2d 1051, 1054 (Fed. Cir), cert. denied, 484 U.S. 827 (1987). A prior art reference anticipates the subject of a claim when the reference discloses every feature of the claimed invention, either explicitly or inherently (see, In re Paulsen, 30 F.3d 1475, 1478-1479, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994), In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990), Hazani v. Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Moreover, a reference anticipates a claim if it discloses the claimed invention such that a skilled artisan could take its teachings in combination with his own knowledge of the particular art and be in possession of the invention. In re Graves, 69 F.3d 1147, 1152, 36 USPQ2d 1697, 1701 (Fed. Cir. 1995), cert. denied, 116 S. Ct. 1362 (1966), quoting from In re LeGrice, 301 F.2d 929, 936, 133 USPQ 365, 372 (CCPA 1962).

Applicant has argued that in citing Wilford, it is unclear what shape that the blades sweep out and what about the shape gives it the characteristic of being a lifting body. The previous Office action clearly indicated that rotatable blades 10/11 sweep out the shape of a virtual disk. Note that any rotating object will sweep out the shape of a lifting body. With regard to Applicant's argument that the angled surface of Wilford is too sharply angled to be an effective

lifting body, this argument is not persuasive because more of an angled surface results in more camber, which equates to greater lift. Because the blades are airfoil-shaped blades 18, lift will be generated as set forth above. With regard to Hartt and Wallace, Applicant has argued that a circular wing and not a virtual disk swept out by the blades is shown. This argument is not persuasive because rotation of the blades or circular wing about a vertical axis causes a virtual disk to be swept out.

With regard to Applicant's argument that Bennie shows a standard helicopter blade set except that there is a mechanism for altering the pitch of the outer portion of the blade, which does not affect the camber and is not a lifting body, these arguments are not persuasive because as set forth in the previous Office action, means 58 control the aerodynamic warping of the blades, which is the same as the camber. Blades 41, 42 are clearly airfoil-shaped, and thus causing lift during rotation of the virtual body. With regard to Applicant's argument that lever 15 of Wilford changes the hub and axis of rotation which is different from camber, lever 15 is moved to tilt the hub and axis of rotation, which will shift the position of outer portion 11 of the blades due to the change in the forces of lift. See page 2, lines 27-31 and 69-75.

Claim Objections

Claims 1-4 are objected to because of the following informalities: Appropriate correction is required.

In claim 1, line 4, "substantially" should be changed to -- a substantially --.

Specification

The abstract of the disclosure is objected to because it contains the term "is disclosed" (line 7) which is implied and should be deleted. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is ambiguous as to the configuration of the set of rotatable blades that is covered by the claimed subject matter in that it is not clear whether any set of rotatable blades that has a degree of camber (downward turn) over any extent thereof would effect a virtual disk shape having the properties of a lifting body, as now claimed. Applicant indicates that the present invention in Figure 1b is in a flat configuration similar to the shape of standard helicopter blades (shown in the figure with slightly downwardly cambered ends). It is unclear if the downwardly cambered ends in Figure 1b are the shape of the ends of the referenced standard (prior art) helicopter blades. In figure 13a, the blades turn down "slightly" near distal ends 116. It has not been clarified that rotatable blades that have any degree of camber (downward turn) over any extent thereof would effect a virtual disk shape having the properties of a lifting body as is now claimed. In other words, the language, when read in light of the underlying disclosure, leaves it uncertain as to what configuration for the set of rotatable blades would, in fact, be capable of sweeping out a virtual disk shape having properties of a lifting body to generate lift.

It is uncertain as to the scope of virtual disk shapes (swept out by a set of rotatable blades) having the properties of a lifting body now claimed. The specification offers symmetrical and asymmetrical blade variations, which are disclosed as functioning to sweep out a (virtual) lifting body. For example, Figures 2 and 2a depict a blade symmetrically deformed downwardly at distal ends that is indicated to sweep out a shape similar to that of an inverted flying disk, with the similar aerodynamic property of providing lift. Figure 13a reveals symmetrical rigid blades that turn down slightly near distal end 116 and are disclosed as creating a lifting body that is "somewhat 'frisbee' shaped" when spun rapidly. In Figure 13c, the symmetrical rigid blades (not distal ends) are disclosed as having a rigid downward camber. On the other hand, applicant indicates that an asymmetrical blade, such as in Figure 3b imparts an asymmetrical camber to the shape of a lifting body. The specification as a whole, however, does not provide an adequate basis for understanding the scope of the claimed disk shapes having the properties of a lifting body, as indicated above. Finally, being virtual, it is not clear that the virtual disk shape can be pushed through real air to thereby generate real lift, this recitation being akin to the disclosure that the virtual disk "cuts rapidly" through real, not virtual air (applicant's specification, page 2).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 4, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Wallace 4,195,800. Note the helicopter blade assembly 17 permitting rapid forward flight with separate means 13 for providing a forward impetus, the substantially vertical mast 35, and rotatable blades 18 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is pushed translationally horizontally through the air, it generates lift. The virtual disk swept out has a center 19 (figure 4) which is substantially flat at and near the center, and slopes downwardly at the edge of the virtual disk near 18. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 13 for providing a forward impetus disclosed by Wallace is in the form of thrust unit having a propeller assembly and engine, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification.

Claims 1-4, as far as they are definite and understood, are rejected under 35 U.S.C. 102(b) as being anticipated by Wilford 2,108,839 (figures 5-6). Note the helicopter blade assembly 5 permitting rapid forward flight with separate means 3 for providing a forward impetus, the substantially vertical mast (unnumbered, near 4), and rotatable blades 10/11 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is pushed translationally horizontally through the air, it generates lift. Note the means 15/12/13 for controlling the camber. The blade outward tips (near 11/11a)

have their camber controlled by downward bending near the outward tips of the blades. The virtual disk swept out has a center 19 (figure 5) which is substantially flat at and near the center, and slopes downwardly at the edge of the virtual disk near 11. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 3 for providing a forward impetus disclosed by Wilford is in the form of a propeller driven by an engine, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification. Claim 2, lines 2-3 recite "means for controlling the camber of the blades, thereby controlling the shape of the virtual disk", which invokes 35 USC 112, sixth paragraph. Applicant's specification does not give any definition for the "means for controlling the camber of the blades, thereby controlling the shape of the virtual disk", although Applicant's specification discloses that hinges 14 are attached to blades 12 and permit changing of the camber of the blades. The hinge 12/13 and stick/lever 15 disclosed by Wilford performs the identical function specified in claim 2, lines 2-3 of controlling the camber of the blades, thereby controlling the shape of the virtual disk, and Applicant's specification does not provide any explicit definition that would exclude the hinge 12/13 and stick/lever 15 of Wilford. Because the hinge 12/13 and stick/lever 15 of Wilford produces the same claimed function in substantially the same way (by allowing the blade tips 11/11a to pivot about hinge 12/13) and produces the same result of controlling the camber of the blades, thereby controlling the shape of the virtual disk, the hinge 12/13 and stick/lever 15 of Wilford is considered to be equivalent to the "means

for controlling the camber of the blades, thereby controlling the shape of the virtual disk" disclosed in Applicant's specification.

Claim 1, as far as it is definite and understood, is also rejected under 35 U.S.C. 102(b) as being anticipated by Hartt 4,301,981 (figure 2). Note the helicopter blade assembly 46 permitting rapid forward flight with separate means 36 for providing a forward impetus, the substantially vertical mast 26, and rotatable blades 46 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is pushed translationally horizontally through the air, it generates lift. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 36 for providing a forward impetus disclosed by Hartt is in the form of a thrust propeller driven by an engine, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification.

Claims 1-3, as far as they are definite and understood, are also rejected under 35 U.S.C. 102(b) as being anticipated by Bennie 3,558,082. Note the helicopter blade assembly near 41, 42 permitting rapid forward flight with separate means 34 for providing a forward impetus, the mast 60 which is considered to be "substantially vertical" because it extends mainly in a vertical direction, and rotatable blades 41, 42 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is

pushed translationally horizontally through the air, it generates lift. Note the means 58 for controlling the aerodynamic warping of the blades, which is equivalent to controlling the camber. The blade outward tips have their camber controlled by downward bending near the outward tips of the blades. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 34 for providing a forward impetus disclosed by Bennie is in the form of a pusher propeller driven by an engine, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification. Claim 2, lines 2-3 recite "means for controlling the camber of the blades, thereby controlling the shape of the virtual disk", which invokes 35 USC 112, sixth paragraph. Applicant's specification does not give any definition for the "means for controlling the camber of the blades, thereby controlling the shape of the virtual disk", although Applicant's specification discloses that hinges 14 are attached to blades 12 and permit changing of the camber of the blades. The blade warping mechanism 58 disclosed by Bennie performs the identical function specified in claim 2, lines 2-3 of controlling the camber of the blades, thereby controlling the shape of the virtual disk, and Applicant's specification does not provide any explicit definition that would exclude the blade warping mechanism 58 of Bennie. Because the blade warping mechanism 58 of Bennie produces the same claimed function in substantially the same way (by warping blades 41/42) and produces the same result of controlling the camber of the blades, thereby controlling the shape of the virtual disk, the blade warping mechanism of Bennie is considered to be equivalent to the "means for

controlling the camber of the blades, thereby controlling the shape of the virtual disk" disclosed in Applicant's specification.

Claim 1, as far as it is definite and understood, is also rejected under 35 U.S.C. 102(b) as being anticipated by Black 4,913,376 (figures 1-2 and 4). Note the helicopter blade assembly 12 permitting rapid forward flight with separate means 22 for providing a forward impetus, the substantially vertical mast near 86, and rotatable blades 40, 44 which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is pushed translationally horizontally through the air, it generates lift. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 22 for providing a forward impetus disclosed by Black is in the form of a propeller driven by an engine, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification.

Claims 1 and 4, as far as they are definite and understood, are also rejected under 35 U.S.C. 102(b) as being anticipated by Kunz 5,240,204 (figures 1 and 3). Note the helicopter blade assembly 10 permitting rapid forward flight with separate means 62 for providing a forward impetus, the substantially vertical mast near 32, and rotatable blades 38/42/26' which sweep out the shape of a virtual disk having the properties of a lifting body when rapidly rotated by the mast so that as the disk is pushed translationally horizontally through the air, it generates

lift. The virtual disk swept out has a center near 32 (figure 3) which is substantially flat at and near the center, and slopes downwardly at the edge of the virtual disk near 26'. The clause in claim 1, lines 2-3 of "separate means for providing a forward impetus" invokes 35 USC 112, sixth paragraph. Applicant's specification (page 2, line 12) states that the separate means for providing a forward impetus is, for example, a propeller or a jet engine. The separate means 62 for providing a forward impetus disclosed by Kunz is in the form of a propeller driven by an engine 48, which is an equivalent to the separate means for providing a forward impetus disclosed in Applicant's specification.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.
April 22, 2006

Christopher Verdier
Primary Examiner
Art Unit 3745